

## ABSTRACT

A portable communication device including a power control system which estimates  $E_b/N_t$  by determining the variance of the noise components of PCBs that are received on the fundamental traffic channel. The power control system includes a demodulator for demodulating a BPSK modulated (or PAM) first signal from a base station, a noise variance calculation circuit that samples the perpendicular noise component of the demodulated signal to determine a noise variance, a power estimation circuit that measures the power of the demodulated signal and provides an estimate of the power of the first signal by eliminating the noise variance from the demodulated signal, and a comparator that compares the ratio of the power estimate and the noise variance to a threshold. The comparator output is a power up or power down signal to the base station.